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REMINISCENCES OF EGYPT IN DORIC ARCHITECTURE.

If we examine the characteristics of Doric Architecture with a view to their origin, we cannot fail to reach the conviction that a large majority of them may be traced to Egyptian prototypes. This may surprise us at first, since the general aspect of the two styles of architecture is very different. The Egyptian temple is heavy and grand, impressing us by the massiveness of its walls and pylons, the number and size of its columns, the extent and multiplicity of its divisions. It consists of a succession of courts and halls, terminating in the sanctuary, which is enshrouded in darkness. On the other hand, the Greek temple is relatively light and graceful, more compact in form, with a central and better-lighted sanctuary, inviting the eyes of the people to rest upon the life-like statue of the divinity within. And yet, not only the general disposition of the Doric temple but those puzzling and apparently unmeaning forms which have given rise to so many wild hypotheses are to be found in their natural relations in Egypt, where their significance is clear. In its most complete form, the Greek temple is found within a sacred enclosure, a *temenos*, which was entered through more or less imposing *propylaia*. There is nothing strange or inappropriate in thus separating the religious from the non-religious structures, and the Greeks might naturally have done this without foreign influence. Yet we may remark that the Greek *temenos*¹—containing its sacred olive or oak or willow or myrtle or laurel, its sacred springs, and its altar for burnt-offering in front of the temple—may still be an echo of the Egyptian *temenos* with its sacred tamarisks and acacias and lotus flowers,² its sacred lake,³ and its altar in front of the temple.⁴

On approaching the Doric temple, we are struck with several features of apparently non-Egyptian origin—the krepidoma or stepped base upon which the temple stands, the peripteral columns surrounding the temple-cella, and the gable roof. If we look to the Orient for the

¹ BÖTTICHER, *Die Tektonik der Hellenen*, Bd. II, §§ 41, 44, 48.

² WILKINSON, *Ancient Egyptians*, vol. III, pp. 349–51.

³ PERROT and CHAPIEZ, *Égypte*, p. 351.

⁴ PRISSE D'AVENNES, *Histoire de l'Art égyptienne*, pp. 409–10.

origin of the krepidoma, we might suppose it to be a reminiscence of the terraced pyramids of Babylonia and Assyria.⁵ But none of the distinctive features of these temple-bases⁶ are reproduced in the Greek. In the Babylonian type, the successive stages are of different forms and are not superposed upon a central axis. In the Assyrian type, the ground-plan is square, and the ascent to the temple-cella is by means of a spiral ramp. An arched base appears, in one Assyrian relief, as the lowest stage of one of these terraced pyramids.⁷ Neither is there anything in the Doric krepidoma to suggest the panelled decoration or the coloring by which Mesopotamian temple-bases were characterized. But in Egypt we find closer analogues. There are many instances of a sacred structure set upon a plinth and reached by a flight of steps in front. Such are the little chapels over tombs at Sakkarah, and the little temples at Elephantiné.⁸ Nor do we need to look outside of Egypt for the stepped pyramidal form, for it is found in the mastaba-pyramids of the ancient empire.⁹ So far as the krepidoma is concerned, then, it is not necessarily a reminiscence of non-Egyptian forms. As for the peripteral character, this does not remind us of the ordinary disposition of the Egyptian temples, which are surrounded by heavy walls. However, Egypt, as early as the XVIII dynasty, was not without examples of peripteral temples, such as those at Elephantiné and El Kab,¹⁰ and was acquainted with the form *in antis* and *prostylos*, as these same examples show. Moreover, the sanctuary in the larger Egyptian temples was usually surrounded by a passage-way, corresponding to the Greek *pteronoma*. It has been customary, ever since the days of Vitruvius, to see in the peripteral huts of Lykia the prototypes of the Doric temple.¹¹ But, if we set aside its peripteral character, what a gigantic effort of the fancy is required to evolve from the Lykian hut all the other peculiarities of Doric architecture! Even when we mention the gable roof, a form of structure unnecessary under cloudless southern skies, but practically universal in more northern climates, it is not to Assyria that we look for prototypes, for ruins and basreliefs

⁵ This is suggested by REBER, *History of Ancient Art*, p. 220.

⁶ PERROT and CHAPIEZ, *Assyrie*, c. IV.

⁷ *Ibid.*, fig. 34.

⁸ PERROT and CHAPIEZ, *Égypte*, figs. 190, 230.

⁹ The stepped pyramid of Sakkarah is considered by Mariette to be the oldest building in the world: MARIETTE, *Itinéraire de la Haute-Égypte*, p. 77.

¹⁰ MASPÉRO, *L'Archéologie égyptienne*, p. 66 ff.

¹¹ This theory is given in detail in HITTOFF and ZANTH, *Architecture antique de la Sicile*, liv. VI.

there show us horizontal-roofed structures and but one example of the gable roof, and that on a basrelief representing an Armenian temple. But the Egyptians of the XII dynasty were acquainted with the gable roof, as may be inferred from the gabled ceilings in some of the tombs at Beni-Hassan¹² and from the pyramidal-roofed chapels of the Abydos tombs of the same period.¹³ We are not, then, compelled to assume either an indigenous or an Asiatic origin for Doric architecture, since all of its essential elements may have come to Greece from Egypt centuries before the primitive Dorians emigrated from their mountain homes in Thessaly.

In considering the elevation of the Doric temple, we may notice, as a peculiar and unnecessary characteristic, the inward slant given to the walls and to the peripteral columns. Structurally, there was no necessity for this; nor does there seem to have been sufficient optical

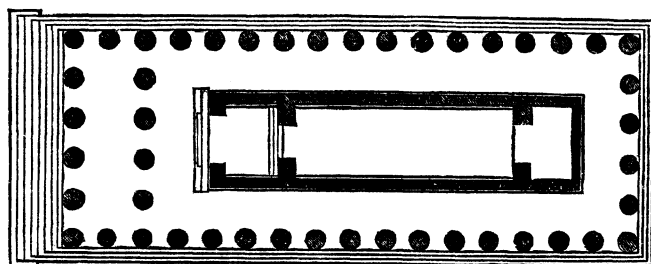


FIG. 7.—*Middle Temple of akropolis of Selinous.*

ground for such a peculiarity. We may notice, also, that it is found in the older Doric temples, but does not occur in the Ionic buildings. Are we to suppose that the more refined Ionians were not endowed with as keen vision as the ruder Dorians, and that they built perpendicular walls and set their columns vertically because their visual sense was dull? We cannot believe it, though an ancient Egyptian might. He was trained to see the walls of temples slant inward, as the surfaces of a truncated wedge. This made his structures models of solidity, and the Dorians perpetuated the tradition in peripteral buildings, where it had not the same significance. The inward slant in columnar structures supporting architraves was a source of weakness, not of strength, and it consequently diminishes in the more fully developed style.

¹² *Monumenti dell' Instituto*, vol. II, pl. 45; PROKESCH, *Erinnerungen aus Aegypten u. Kleinasien*, II, p. 21.

¹³ PERROT and CHIPIEZ, *Égypte*, figs. 160-2.

In their ground-plan, also, the earlier Doric temples resemble the Egyptian more closely than do the later ones. If we compare the ground-plan of Selinous Temple C (*Fig. 7*) with the plan of the ancient granite temple at Karnak,¹⁴ we find a similar elongated cella with its triple division into *pronaos*, *thesauros* and *adyton*. The ratio of the shorter to the longer sides is nearly the same, both are entered from one end only, and they lack the columns and *antæ* in front. As it is possible, however, that the closeness of this resemblance may be due to the restorations made at Karnak by Philip Arrhidaïos, it is more to our purpose to observe that Doric temples preserve a reminiscence of the outer courts (*Fig. 8*) of the Egyptian temples, as well as of the innermost sanctuary. Of the Egyptian peristyle-court we find a close copy in the peristyle-court in front of the *megaron* of the royal palaces at Tiryns and Mykenai; and the vestibule (*αἶθουσα δώματος*) of the *megaron* seems to correspond to the Egyptian hypostyle-court. And in

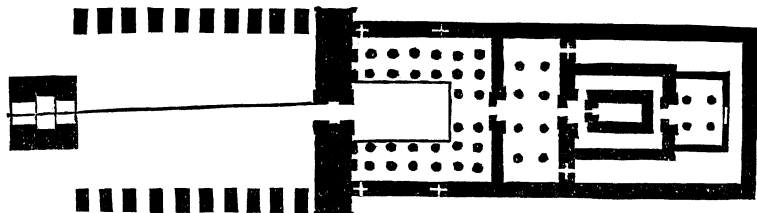


FIG. 8.—Southern Temple of Karnak.

Doric temples may we not see a reminiscence of the peristyle-court in the peristyle encircling the cella? The necessity of a peristyle-court had disappeared with the growth of the democratic spirit. The sanctuary of the divinity is brought into the very centre of the court of the people. This disposition was also more practical in a rolling country where temples were set on constructed bases. Why did the thrifty Dorians build useless rows of expensive columns around their temples, unless some significance such as this lay buried deep in their religious traditions? The Egyptian hypostyle hall, with its forest of columns, was still more non-essential to the Greeks, and could well be omitted, being a separate, distinctly marked part of the temple organism. But even this, according to the hypothesis we have ventured to propound, leaves a reminiscence of itself in the unnecessary row of columns in front of the *pronaos*, as is seen especially in Selinous

¹⁴ *Description de l'Égypte*, vol. III, pl. 21.

Temples *C*, s.¹⁵ That this identification is correct would seem to be substantiated by the unnecessary elevation of the pronaos above the peristyle, and of the inner divisions of the cella above the pronaos. Thus, at Selinous Temple *C*, we proceed from the peristyle up two steps to the pronaos, then four steps to the thesauros, and again one step to the adyton, as in the temple of Khons at Karnak we mount four steps from peristyle to hypostyle hall and one step to the sanctuary.

In methods of workmanship we find among the early Greeks many points in common with the Egyptians. Mr. J. T. Clarke writes in the *American Journal of Archaeology* (vol. II, p. 278): *The Egyptian origin of many of the methods of quarrying, cutting and lifting large blocks of stone, in use among the Greeks, becomes more and more certain as our acquaintance with the architectural remains of these countries increases. To take one instance among many: the peculiar method of employing the lewis, observable in early Hellenic buildings (witness the temple of Assos), is the same as that which appears upon Egyptian reliefs, and is recognizable among the débris of Egyptian quarries. We may add to this the similarity in the mode of bonding stones by means of clamps,¹⁶ of laying the trapezoidal blocks in horizontal courses,¹⁷ of the use of a projecting socle with or without an ornamental base-moulding,¹⁸ of the inward slant and diminution of the cella-walls, and, finally, the covering of the stone with stucco to secure a surface for polychromatic decoration.*

Of all the points of resemblance between Greek and Egyptian architectural peculiarities, more attention has been bestowed upon the channelling of the columns than upon any other, until it has become almost a commonplace of the text-books to assume that the polygonal channelled shafts of Beni-Hassan are the prototypes of the Doric, and yet the channelling is almost the only peculiarity which these two modes of support have in common. The polygonal shaft is evolved from lithic antecedents,¹⁹ the simplest form of which is the square pier: it has an abacus but no capital. The Doric column differs essentially

¹⁵ In the absence of an appropriate name for these columns, may we not venture to call them the hypostyle columns?

¹⁶ DURM, *Baukunst der Griechen*, p. 43.

¹⁷ *Ibid.*, p. 46.

¹⁸ Cf. PERROT and CHAPIEZ, *Égypte*, II, figs. 131, 132; DURM, *Bauk. d. Gr.*, p. 56.

¹⁹ W. S. PRATT, *The Columnar Architecture of the Egyptians*, in *Proc. of Amer. Acad. of Arts and Sciences*, vol. xv, p. 313 ff. Mr. Pratt proves conclusively that the Doric column is not derived from the polygonal shaft at Beni-Hassan, but hastily rejects as absurd a suggestion of its derivation from the commoner type of Egyptian column.

from this. It has a strong tapering character, diminishing toward the top: the polygonal shaft has a very slight diminution.²⁰ The column has an *entasis*, which gives it a curvilinear profile: the polygonal shaft, so far as we know, has no *entasis*. The column has a neck with incised annuli, and a capital consisting of a strongly curved echinus with raised annuli: the polygonal shaft has neither neck nor annuli nor echinus. All of these peculiarities betray the ultimate though not immediate derivation of the Doric column from wooden prototypes, and are found in the Egyptian so-called lotiform columns,²¹ which may be more properly named reed-bundle columns. As we know that reed-bundle columns are used to this day in Egypt, Mesopotamia and India,²² we find here a natural explanation for this class of columns. The strong diminution is accounted for by the natural tapering of the reeds; the annuli are bands by which the bundle of reeds is bound together; the echinus of the capital and the entasis of the shaft represent the natural yielding of the bundle of reeds, which would be found just above the points where they are held together, when sustaining the weight of a heavy entablature (*Fig. 9*). Professor Lepsius²³ emphasizes the derivation of the Doric (*Fig. 10*) from the reed-bundle column of Egypt, but believes that the one feature of channelling was borrowed from the polygonal shaft. But, if we may trust the apparently careful drawing in Prisse d'Avennes of the details of the temple at Gournah (he calls it Menephthum) (*Fig. 11*), we see that the Egyptians themselves, by the time of Seti I, had begun to channel the reed-bundle column. It should not surprise us, therefore, that the Greeks did the same. The inner order of columns of the temple at Gournah are decorated with sculptured figures, suggesting to our minds the *columnæ cœlatæ* of Ionian architecture. We make a further observation in connection with this temple. The columns have bases, but the intercolumniations are filled in with blocks of stone up to the level of the bases of the columns. This diminishes the effect of the huge bases and suggests the improvement made by the Greeks in omitting the bases altogether.²⁴

The Ionic capital is less directly but no less truly of Egyptian ori-

²⁰ PRATT, *ibid.*, pp. 323-4.

²¹ PERROT and CHIPIEZ, *Égypte*, figs. 76, 78.

²² PRATT, *ibid.*, p. 346.

²³ *Annali d. Inst. Arch. di Roma*, 1837, and *Abh. Berl. Akad.*, 1871.

²⁴ It is highly probable that the earliest Doric columns were provided with bases: See CLARKE, *A Doric Shaft and Base found at Assos*, *AJA*, II, p. 267.

gin, having been derived, as Professor W. H. Goodyear has shown (*AJA*, III, p. 271 ff.), from a conventional lotus-flower, which, as a decorative form, had spread in very early times from one end of the Mediterranean to the other. Even the Corinthian capital may be best explained as a variation of the Egyptian calyx-capital, in which the Greek acanthus has been substituted for Egyptian floral decoration.²⁵

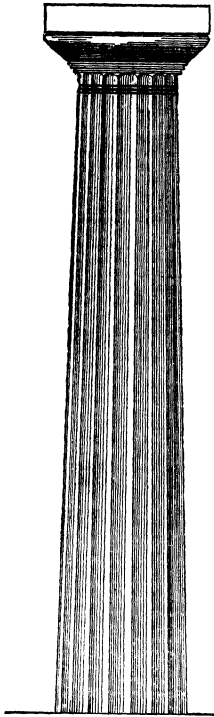


FIG. 10.
Doric Column.

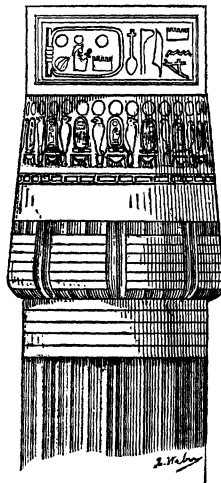


FIG. 11.
*Reed-bundle Column at
Gournah. (Seti I).*

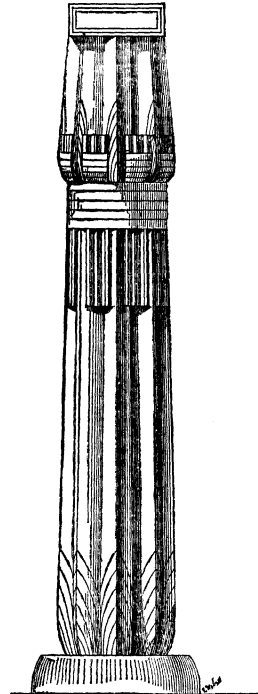


FIG. 9.
Reed-bundle Column.

In every instance, the Greek capitals exhibit forms which, as such, may attract our attention as more beautiful, geometrically more exact, and artistically further advanced ; but the naturalistic starting-point is found in Egypt.

It is sometimes admitted (as by Reber in his *History of Ancient Art*) that the Greek column is of Egyptian origin, while it is still main-

²⁵ This was suggested, in 1803, by QUATREMÈRE DE QUINCY, *De l'Architecture égyptienne*, p. 251.

tained that the entablature is not. But it is not difficult to discover in the Greek entablature some reminiscences of an Egyptian ancestry. The Egyptian entablature consisted of architrave and cornice. Let us assume that the earliest Greek entablatures consisted of these two members only, and that the separation of frieze and cornice was a later development. We may then see in the Greek entablature a distinct reminiscence of an Egyptian prototype. The Egyptian cornice consisted of three elements: a torus-moulding, above which was a scotia or concave member, and above this a flat corona (*Fig. 12*). In the Greek entablature, the round torus-moulding is replaced by a square

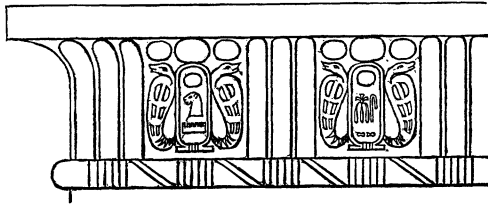


FIG. 12.—*Egyptian Cornice.*

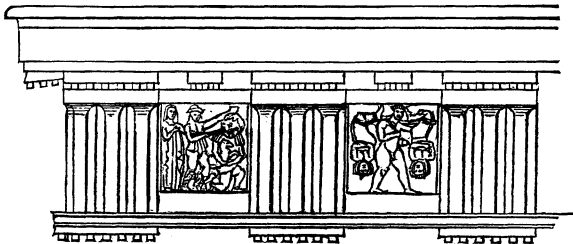


FIG. 13.—*Entablature of Selinous Temple C.*

fillet, but the change had not been completely established when Selinous Temple *C* was built, for the square fillet here has a round moulding embedded in its central line (*Fig. 13*). The Egyptian scotia, which gave a horizontal line of shadow below the corona, is replaced in the Greek entablature by the triglyphal frieze. This retains the likeness of its ancestry in presenting a division into triglyphs and metopes, similar in form and color to decorations of the Egyptian cornice, and resembles it, also, in the horizontal line of shadow resulting from the overhanging cornice. It diverges from its Egyptian prototype in substituting an acute angle for the curved scotia. Even this substitution had not been completely made in Selinous Temple *C*, where the upper

part of the triglyphs are slightly but distinctly curved. The chief element in the Greek cornice, the corona, resembles the crowning member of the Egyptian. It may be objected, that it is simpler to suppose the Greek entablature a mere translation into stone of preëxisting wooden forms of construction. But, as a matter of fact, the actual ceiling-beams, of which the triglyphs are supposed to represent the decorated ends, do not correspond, either in position or arrangement, with the triglyphs. Again, the triglyphal frieze, if a translation of wooden forms, presupposes the previous existence of a horizontal ceiling. But the earliest Greek temples seem not to have been horizontally ceiled, for roofing-tiles painted on both sides, found at Selinous Temple *S*, indicate a gable, not a horizontal ceiling. The mutules, also, which correspond more nearly, in their position above the frieze, to the actual ceiling-beams, preserve by their form the suggestion of a sloping roof, even on the short sides of the temple, where that suggestion has no corresponding structural significance. So that they who assume an indigenous origin for the triglyphal frieze may be forced to admit that it is not an immediate translation into stone of previous wooden construction, but is composed in a purely decorative manner. Assuming, then, the fundamentally decorative character of the triglyphal frieze, we find several points of correspondence with its Egyptian ancestral form. The continuous row of leaves, which ordinarily decorates the Egyptian cornice, is frequently broken into successive groups, each composed of three leaves, corresponding to triglyphs, while the otherwise decorated intervening spaces may be compared to metopes. In Egyptian, Assyrian, and Phœnician industrial art, many instances may be found of this metopal method of decoration. When this arrangement occurs in architecture, the decoration at the temple corners is made in Egypt by a group of three leaves, as in Doric by the corner triglyph. Again, the leaves are incised and have curvilinear termini, as have the grooves of early Doric triglyphs: in Egypt, the leaves were painted blue, the color invariably used for Doric triglyphs. A general correspondence between the Doric frieze and the Egyptian cornice was observed at the end of the last century and was rejected, as a mere superficial resemblance, by Quatremère de Quincy. It was more thoroughly recognized by Hans Auer in a careful series of papers on the significance of triglyphs.²⁶ To the same writer we are indebted for having noted the fol-

²⁶ *Zeitschrift f. bild. Kunst*, 1880.

lowing correspondences between the proportions in Egyptian and Doric architecture.

I. *Egyptian*. (1) The height of the columns varies from $4-4\frac{1}{2}$ lower diameters in the monuments of the earliest period to $6-6\frac{3}{4}$ in the latest: when Egyptian architecture was most flourishing (Karnak and Luxor), the prevailing norm was $5-5\frac{1}{2}$ l. d. (2) The intercolumniation varies from 1 and $1\frac{1}{8}$ to 2 lower diameters: in the middle period it is almost regularly $1\frac{1}{4}$. (3) The height of the architrave including the torus moulding varies from $\frac{2}{3}-\frac{4}{5}$ l. d., that of the entire cornice from $1\frac{1}{4}$ to $1\frac{3}{8}$ l. d. The *axenweite*, or distance from centre to centre of the columns, compared with the entire height of the order, varies from $1:2\frac{3}{4}$ to $1:3\frac{1}{4}$.

II. *Doric*. (1) Columnar height in lower diameters: $4\frac{1}{16}$ Corinth, 5.48 Parthenon, 5.68 Theseion, $6-6\frac{1}{2}$ Portico at Delos and Stoa at Athens. (2) Intercolumniation: $1\frac{1}{3}$ Corinth, .98-1.1 Old Parthenon, 1.26 New Parthenon, 1.64 Theseion, $2-2\frac{2}{3}$ Delos. (3) Height of architrave in lower diameters: $\frac{4}{5}$ Corinth, $\frac{2}{3}$ Old Parthenon, $\frac{1}{10}$ New Parthenon, $\frac{1}{10}$ Theseion, $\frac{2}{3}$ Stoa at Athens. The normal height of the entablature, with or without the kymation, is 2 lower diameters. The average norm for the relation of the axis-distance to the height of the order is 1:3.

These proportions hold for the reed-bundle order of Egyptian architecture and not for the polygonal columnar system, an interesting fact in discussing the origin of the Doric column. It may also be observed that the line of development in Greece is the same as that in Egypt.

Before leaving the entablature we may remark that it is not easy to see the exact historical significance of the *regulae* below and the mutules above the frieze with their trunnels or *guttae*. If of Egyptian origin, are they to be connected with the dentils, such as those which appear over the architraves at Beni-Hassan, or with the pendent lotus-buds which hang from the wooden royal pavilions,²⁷ or with the decorations which sometimes adorn the architraves?²⁸ None of these suggestions seem to be satisfactory; so, we leave the problem of their origin undetermined, remarking merely that the modern wooden-peg and the ancient rain-drop hypotheses do not give us any further light.

There is a structural peculiarity in Doric architecture which has

²⁷ PRISE D'AVENNES, *Plates, Constructions en bois*.

²⁸ QUATREMÈRE DE QUINCY, *Arch. égypt.*, pl. 7, figs. 46, 49.

received considerable attention, especially from English observers—the curvature of horizontal surfaces.²⁹ It is found in the rock-cut base of the archaic temple at Corinth, and on both base and entablature of the Poseidon temple at Paestum, as well as in the more refined buildings at Athens—the Theseion, the Parthenon, the Erechtheion, and the temple of Zeus Olympios. It would seem as if we might admit that at least this peculiarity was developed by Greek rhythmical sense, for it is nothing short of a generalization, through the whole structure, of the columnar entasis. But even here the Egyptian architect had set the fashion. Rosellini, in describing one of the tombs at Beni-Hassan,³⁰ calls attention to the fact, that the surfaces of the gable-ceiling are not flat but are slightly curved, and Pennethorne³¹ has observed and measured the curvature of the architraves of the inner court of Medinet Abou.³²

Painted ornaments and sculptured mouldings also exhibit a strong Egyptian imprint. We do not need to look so far back as the painted walls at Tiryns and the sculptured ceiling at Orchomenos for reminiscences of Egypt in Greek decorative design. The spiral and square mæander, the palmette and rosette, and the star upon a blue ground, are well-known Egyptian motives.³³ Similarly, the astragal and the egg and dart, the heart-ornament and the ox-mask, may be traced back to the earliest dynasties of the Egyptian empire.³⁴

Our aim has been, to merely point out the many indications of relationship between Egyptian and Doric architecture, not to determine the exact historical relation between them. But we may here recall the fact, that Thothmes III conquered the Greek islands³⁵ and that, for the two centuries from the reign of Seti I to that of Rameses III, Pelasgian tribes invaded Egypt, and with them were Achæians, Lykians, Etruscans (Tyrseni or Tyrrheni) and Siculi;³⁶ and that, during the

²⁹ PENROSE, *Principles of Athenian Architecture*; PENNETHORNE, *The Geometry and Optics of Ancient Architecture*.

³⁰ *Mon. Civ.*, vol. I, p. 70, quoted by LEPSIUS, *loc. cit.*, p. 89, Note 1.

³¹ *Op. cit.*, pt. III, ch. II.

³² At Medinet Abou, the curvature of the architrave is horizontal, instead of vertical as in Greece.

³³ PRISSE D'AVENNES, *Plates, Ornementation des Plafonds*.

³⁴ DIEULAFOY, *L'Art antiq. de la Perse*, pt. 3, p. 61.

³⁵ MASPÉRO, *Histoire ancienne des peuples de l'Orient*, p. 206.

³⁶ The famous inscription from Karnak, recording the conquest of Menephtah over the Lebu, Kehak, Mashuasha, Tulsha, Leka, Akaiouasha, Shardana and Shakalasha,

reign of Menephtah, they settled there, until the king complained "They have established themselves; the days and months roll by and they still remain."³⁷ We then find the palaces of Achaian princes and the Mykenai type of art saturated with Egyptian influence. Through such monuments in the Peloponnesos and in the Greek islands, the Dorians, from the first moment of their conquest, came into contact with semi-Egyptian architectural and decorative forms. Through the Phœnicians, also, they received an inspiration of similar character, until, in the seventh and sixth centuries, direct relations with Egypt were fully established.

To summarize our results—we have found reminiscences of Egypt in Doric temple-architecture in the temenos with its sacred trees and springs and altar; we have seen that the temple-base, the peripteral supports, and the gable roof, are not necessarily non-Egyptian forms; we have found that the Greek preserves the Egyptian methods of construction, even to the use of slanting walls and stuccoed columns; that the temple-plan shows reminiscences of the peristyle and hypostyle halls, as well as of the sanctuary; that the diminution, entasis, echinus, and annuli of the Doric shaft may be best explained upon the hypothesis of an Egyptian origin, and that the Ionic and Corinthian capitals became intelligible in the same way; that the Doric entablature, by both the form and the color of its triglyphal frieze, betrays its relationship to the Egyptian cornice; and that the ordinary details, whether sculptured mouldings or painted ornament, are mere variations of well-known Egyptian forms.

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has been variously interpreted. De Rougé, Chabas, Lenormant, Maspéro, Curtius, and Brugsch favor a combination of Libyan with northern peoples. On the other hand, Unger, Duncker, Halévy, and Wiedemann interpret them all as Libyan tribes. See WIEDEMANN, *Ägyptische Geschichte*, 13 Kap., § 37.

³⁷ LENORMANT, *Histoire ancienne de l'Orient*, vol. II, ch. IV, § 6.